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VARIETAL DESCRIPTION OF NORWIN HARD RED WINTER WHEAT

Registered: October 2, 1986, No.2696

Origin and breeding:

Norwin, tested as MT 7877 and PI 491533, was developed cooperatively by the Montana Agricultural Experiment Station, Bozeman, Montana and the USDA-Aberdeen Research Station. The pedigree of Norwin is Froid/Winoka/MT 6928/Trader (MT 6928 = TX 65A1508/Westmount). Froid is a winter hardy variety while Winoka and Trader are tall, stem rust resistant cultivars. MT 6928 is a semi-dwarf, shatter resistant line with good yielding ability in low winter stress environments. The original cross was made in 1971. Norwin was selected as a semi-dwarf, stiff-strawed, shatter resistant F_3-derived F_4 line at Montana State University. 200 plant lines were subsequently selected and bulked to form breeder seed.

Varietal characteristics:

Plant characteristics:

Coleptile color:green

Juvenile growth: prostrate

Leaves: dark green and glossy; glabrous blade and sheath

Flag leaf: medium to dark green; semi-erect to erect; medium width to wide; medium length to long; white auricles with glabrous margins; glabrous sheath and blade; slight waxy bloom on sheath.

Straw: little or no anthocyanin coloration at maturity; hollow internodes; glossy upper internode; three nodes; uppermost node glabrous; snaky, fine culm neck

Tillers: intermediate number

Heading: mid-season

Maturity: similar to Norstar

Plant height: short; 37 cm shorter than Norstar

Shattering resistance: good

Drought tolerance: fair

Winter survival: fair; similar to Winalta, inferior to Norstar

Sprouting tendency: high; similar to Norstar

Lodging resistance: good; better than Norstar, particularly under high moisture

Disease reaction: susceptible to leaf rust (*Puccinia triticana*); moderately resistant to stem rust (*Puccinia graminis*); U.S. data also indicate that Norwin is susceptible to bacterial leaf spot (*Pseudomonas syringae*) and resistant to prevalent races of stripe rust (*Puccinia striiformis*) and leaf blotch (*Pyrenophora tritici-repentis*).

Spike characteristics:

Shape: tapering to strap or oblong; lax to medium density; medium length to long

Attitude: erect

Color: dark green five days after heading; glossy; white at maturity

Awns: long; slightly spreading

Spikelets: no supernumerary spikelets; intermediate number of spikelets per spike; three seeds per spikelet

Glumes: white with waxy bloom; narrow to medium width; short to medium length; glabrous; narrow to mid-wide, oblique shoulder; acuminate medium width beak

Kernel characteristics:

Color: medium red

Texture: hard

Size: medium size; narrow width; medium length to long

Shape: elliptical

Cheek: rounded

Brush: medium area; medium length hairs

Germ: small; elliptical

Crease: medium width and depth

Bread quality: fair

Protein content: intermediate; similar to Norstar

Inspection: eligible for top grades of Canadian Western Red Winter Wheat

Unacceptable offtypes: tall plants

Useful distinguishing characteristics: plant height at maturity.

Copies of this and related publications may be obtained from the Print Media Branch, Alberta Agriculture, 7000 - 113 Street, Edmonton T6H 5T6 or Alberta Agriculture's District Offices.

Performance and adaptation:

Norwin performs best in the high productivity, low winter stress regions of southwestern Alberta, British Columbia and the northern edge of the prairie parkland. Norwin was slightly outyielded by Norstar, and had a considerably lower winter survival rate than Norstar in the Western Winter Wheat Cooperative tests. Norwin is much shorter than Norstar, and consequently has very good lodging resistance. It is similar to Norstar in 1000-kernel weight, hectolitre weight and protein content.

Utilization:

Norwin has milling and quality characteristics similar to Norstar. Norwin has baking properties similar to Norstar although it produces slightly lower loaf volumes.

Maintenance of Breeder Seed:

Montana State University - Montana Agriculture Experiment Station.

Distribution of stock seed:

With the exception of breeder seed produced in 1986 by the University of Saskatchewan, Montana State University - Montana Agricultural Experiment Station will have sole responsibility for the production of breeder seed. In future years, Canadian seed growers identified by the C.S.G.A. Stock Seed Distribution Committees will obtain foundation seed directly from the Montana Foundation Seed Stocks, Plant and Soil Science Department, Montana State University, Bozeman, Montana, 59717.

Recommended by: Saskatchewan Advisory Council on Grain Crops

Supported by: Expert Committee on Grain Breeding

Experimental Data:

Table 1: Yield (t/ha) of Norwin and Norstar, Western Winter Wheat Cooperative Tests, 1983-1985.

Variety	1983 Leth *	1984 Leth	1984 Olds	1984 Troc
Norwin	2.2	2.7	6.9	5.4
Norstar	3.5	2.5	6.6	7.8

	1985										
	Manitoba		Saskatchewan								
Variety	Minto I	Minto ICM	Gold Prair	Clair	Somm	Kams	Sask 1	Sask 2	Small[1] Plot Mean	Large[2] Plot Mean	Overall Mean
Norwin	4.0	5.2	0.9	3.4	4.3	4.9	5.4	3.3	3.47	4.01	3.62
Norstar	4.1	6.7	0.8	4.7	5.6	4.7	4.2	3.2	3.86	3.76	3.83

1 - Nineteen small plot yield trials. Treatments were replicated a minimum of three times in all trials.
2 - Seven fertilizer trials where cultivars were main plots.
* - Locations: Lethbridge, Olds, Trochu, Golden Prairie, Clair, Kamsack, Somme.

Table 2: Performance of Norwin and Norstar, Western Winter Wheat Cooperative Tests, 1982-1985.

	Yield	Winter Survival		Height	Lodging	100 Kernel weight	Hecto-Litre weight	Protein
Variety	(t/ha)	FSI*	(%)	(cm)	(1-9)**	(g)	(kg)	(%)
Norwin	3.62	470	54.1	63	1.0	30.5	80	13.3
Norstar	3.83	514	73.6	100	4.5	30.4	79	13.5

* Field survival index
** 1 = no lodging

Table 3: Quality characteristics of Norwin and Norstar, Expert Committee on Grain Quality, 1984-1985.

	1984		1985	
Property Grade	Norwin 1 CWRW	Norstar 1 CWRW	Norwin 2 CWRW	Norstar 2 CWRW
Grain				
Test weight (kg/ha)	81.3	81.1	82.5	83.2
1000 kernel weight (g)	34.5	32.5	34.0	35.1
Protein (%)	11.9	11.8	12.1	12.6
Ash (%)	1.28	1.23	1.34	1.22
Flour yield (%)	77.7	77.1	78.1	78.0

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